

CLAIMS

1. Centralised lubrication system for lubricating the cylinder faces in large diesel engines, particularly marine engines, including at least one lubricating apparatus with a number of reciprocating pumps actuated by cams on a rotating control shaft which is 5 driven preferably synchronously with the main shaft of the diesel engine, **characterised in that** it includes:
 - an AC motor connected with and driving the control shaft;
 - means for detecting speed, direction of movement and position of the engine piston and for generating digital or electric signals indicating these parameters;
 - 10 - a control unit which is adapted for receiving the digital/electric signals and which is connected with and controls the AC motor for regulating the rotation of the control shaft and thereby the actuation of the reciprocating pumps.
2. Centralised lubrication system according to claim 1, **characterised by**
 - 15 - reference means connected with the main shaft and which directly or indirectly indicate the position of the main shaft and thereby also the position of the piston;
 - sensor means detecting the position of the reference means; and in
 - that the control unit is connected with and receives signals from sensor means and includes means for detecting angular position as well as angular speed for the 20 reference means and thereby for the main shaft/engine piston.
3. Central lubrication system according to claim 2, **characterised in that** the sensors include two reference sensors that are mutually displaced in the circumferential direction of the main shaft.
- 25 4. Centralised lubrication system according to claim 2 or 3, **characterised in that** the reference means include teeth on a toothed rim that is preferably disposed on the flywheel of the main shaft, and an index reference means, and that the sensor means include an index sensor for detecting the position of the index reference means.
- 30 5. Centralised lubrication system according to any preceding claim, **characterised in** that the AC motor is connected with a resolver which is adapted for providing a signal to the control unit for the actual angular position of the AC motor.

6. Method for lubricating the cylinder faces in large diesel engines, particularly marine engines, including at least one lubricating apparatus with a number of reciprocating pumps actuated by cams on a rotating control shaft which is driven preferably synchronously with the main shaft of the diesel engine, **characterised in that:**

5 - the control shaft is driven by AC motor;

 - detection of speed, direction of movement and position of engine piston is performed;

 - digital or electric signals indicating these parameters are generated;

 - the digital/electric signals are transmitted to a control unit which is connected with
10 and controls the AC motor for regulating the rotation of the control shaft and thereby
 the actuation of the reciprocating pumps.

7. Method according to claim 6, **characterised in that**

15 - the digital/electric signals are established by reference means which are connected
 with the main shaft and which directly or indirectly indicate the position of the main
 shaft and thereby also the position of the piston, and sensor means that detect the
 position of the reference means; and

 - that the control unit is connected with and receives signals from the sensor means
 and includes means for detecting angular position as well as angular speed for the
20 reference means and thereby for the main shaft/engine piston.

8. Method according to claim 7, **characterised in that** reference signals for the position
 of the main shaft are duplicated and provided in at least two mutually independent
 versions, also with regard to supply voltage.

25 9. Method according to any of claims 6 - 8, **characterised in that** the reference signals
 for the AC motor/lubricating apparatus are provided as a combination of signals for
 the speed, direction and position of the engine and a signal for the timing point of the
 lubricating apparatus.

30 10. Method according to any of claims 6 - 9, **characterised in that** the servo-control is
 monitored, and that switching to the backup servo-control is made automatically in
 case of an error in the system.